

# Claims

- [c1] A seal cartridge for an industrial damper comprising:  
a U-shaped flange having an inner leg and an outer leg,  
said U-shaped flange forming a closed loop; and  
a flexible seal membrane attached to said inner and  
outer legs of said U-shaped flange to form an air chamber.
- [c2] The seal cartridge of Claim 1 further comprising:  
an inner seal membrane guide disposed adjacent said  
inner leg on the inside of said air chamber; and  
an outer seal membrane guide disposed adjacent said  
outer leg on the inside of said air chamber.
- [c3] The seal cartridge of Claim 1 further comprising:  
a blade guide located at the open end of said U-shaped  
flange adjacent said inner leg and outside of said air  
chamber;  
wherein said inner leg is longer than said outer leg.
- [c4] In a damper for a duct having a frame mounted cross-  
sectionally in said duct, a blade plate that translates into  
and out of said duct to close and open said damper, and  
a seal cartridge having an air chamber for inflating and

deflating a seal membrane, said seal cartridge being mounted in said frame, said seal membrane engaging with said plate when in the closed position to seal said duct, an improvement comprising:  
one or more attachment members, for removably securing said seal cartridge to said frame.

[c5] The improvement of Claim 4 further comprising:  
a blade guide attached to said seal cartridge such that no portion of said seal cartridge extends past said blade guide toward said blade plate when said air chamber is evacuated and said seal membrane is deflated.

[c6] The improvement of Claim 4 further comprising:  
a plurality of seal membrane guides located inside said air chamber such that portions of said seal membrane assume a minimum radius when said air chamber is evacuated and said seal membrane is deflated

[c7] The improvement of Claim 4 wherein said seal membrane is attached to said U-shaped flange via a plurality of attachment members for attaching said seal membrane to said inner leg and a plurality of attachment members for attaching said seal membrane to said outer leg.

[c8] The improvement of Claim 7 wherein said attachments

members for attaching said seal membrane to said inner and said outer leg are selected from a group composed of bolts, disposed through holes defined in said U-shaped flange and studs, welded to said U-shaped flange.

[c9] The improvement of Claim 7 wherein said attachment members attaching said seal membrane to said inner leg open end of said U-shaped flange than said attachment members attaching said seal membrane to said outer leg.

[c10] The improvement of Claim 4 wherein said seal membrane is composed of a fluoroelastic material.

[c11] The improvement of Claim 10 wherein said fluoroelastic material is reinforced.

[c12] The improvement of Claim 11 wherein said fluoroelastic material is reinforced with a corrosion resistant material.

[c13] The improvement of Claim 11 wherein said fluoroelastic material is reinforced with a material selected from a group comprising stainless steel, nickel alloy, fiberglass, polyester and Kevlar

[c14] The improvement of Claim 7 wherein said inner and outer seal membrane guides are located nearer the open

end of said U-shaped flange than said plurality of attachment members attaching said seal membrane to said flange.

[c15] The improvement of Claim 6 wherein said inner and outer seal membrane guides have circular cross sections.

[c16] The improvement of Claim 5 wherein said blade guide is located at the open end of said U-shaped flange adjacent said inner leg and outside of said air chamber.

[c17] The improvement of Claim 16 wherein said blade guide has a circular cross section and further wherein the outer circumference of said blade guide extends past the top of said inner leg.

[c18] The improvement of Claim 5 wherein said blade guide is composed of a hardened metal or a softer metal having a hardened metal coating.

[c19] The improvement of Claim 4 further comprising an air valve extending through said U-shaped flange and into the interior of said air chamber.

[c20] The improvement of Claim 4 further comprising a hook attached between said blade plate and said seal cartridge, for lifting said seal cartridge out of said frame.

[c21] The improvement of Claim 4 wherein said one or more

attachment members for removably securing said seal cartridge to said frame comprises a plurality of holes defined in said U-shaped flange corresponding to a plurality of holes defined in said frame, further comprising a plurality of nuts welded to said U-shaped flange at each of said defined holes and a plurality of bolts extending through said holes defined in said frame and said U-shaped flange and engaging said nuts.

[c22] The improvement of Claim 4 wherein said one or more attachment members for removably securing said seal cartridge to said frame comprises one or more clamps